

## **ABSTRACT OF THE DISCLOSURE**

A floating point unit includes a multiplier, an approximation circuit, and a control  
5 circuit coupled to the multiplier and the approximation circuit. The approximation circuit  
is configured to generate an approximation of a difference of the first result from the  
multiplier and a constant. The control circuit is configured to approximate a function  
specified by a floating point instruction provided to the floating point unit for execution  
using an approximation algorithm. The approximation algorithm comprises at least two  
10 iterations through the multiplier and optionally the approximation circuit. The control  
circuit is configured to correct the approximation from the approximation circuit from a  
first iteration of the approximation algorithm during a second iteration of the  
approximation algorithm by supplying a correction vector to the multiplier during the  
second iteration. The multiplier is configured to incorporate the correction vector into the  
15 first result during the second iteration.